

$$(\lambda_M \times \phi = 8M)$$

Question: Which of the following statements is incorrect?

- a) Both electronic and electrolytic conductance varies similarly with temperature
- b) Both electronic and electrolytic conductance depends on the nature of conducting material
- c) Electronic conductance is independent but electrolytic conductance depends on the amount of the conducting substance
- d) All the above statements are incorrect

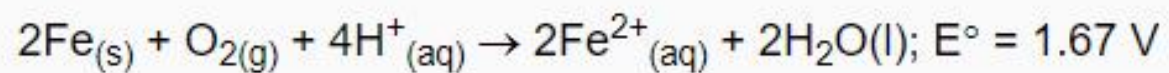
Question: Electrolysis of fused NaCl will give

- a) Na
- b) NaClO
- c) NaOH
- d) None of these

10. The gas X at 1 atm is bubbled through a solution containing a mixture of 1 M Y^- and 1 M Z^- at 25°C. If the order of reduction potential is $Z < Y > X$, then

- (a) Y will oxidize X and not Z
- (b) Y will oxidize Z and not X
- (c) Y will oxidize both X and Z
- (d) Y will reduce both X and Z

Consider the following cell reaction:



At $[\text{Fe}^{2+}] = 10^{-3} \text{ M}$, $P(\text{O}_2) = 0.1 \text{ atm}$ and $\text{pH} = 3$, the cell potential at 25°C is **[IIT JEE 2011]**

A 1.47 V

B 1.77 V

C 1.87 V

D 1.57 V

(2M)

Question 48.

Silver is uniformly electro-deposited on a metallic vessel of surface area of 900 cm^2 by passing a current of 0.5 ampere for 2 hours. Calculate the thickness of silver deposited.

[Given: the density of silver is 10.5 g cm^{-3} and atomic mass of Ag = 108 amu.] (Comptt. All India 2013)

(1+2=3M)

Question 42.

(a) How many coulombs are required to reduce 1 mole $\text{Cr}_2\text{O}_7^{2-}$ to Cr^{3+} ?

(1M)

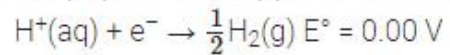
(b) The conductivity of 0.001 M acetic acid is $4 \times 10^{-5} \text{ S/m}$. Calculate the dissociation constant of acetic acid if Λ_m^0 for acetic acid is $390 \text{ S cm}^2 \text{ mol}^{-1}$. (Comptt. All India 2012)

(2M)

$$(1.5M \times 2) \\ = 3M$$

Question 26.

(a) Following reactions occur at cathode during the electrolysis of aqueous silver chloride solution :



On the basis of their standard reduction electrode potential (E°) values, which reaction is feasible at the cathode and why?

(b) Define limiting molar conductivity. Why conductivity of an electrolyte solution decreases with the decrease in concentration? (Delhi 2015)

(2 M)

$$= -212300 \text{ J mol}^{-1} = -212.3 \text{ KJ mol}^{-1}$$

Question 18.

The conductivity of 0.001 M acetic acid is $4 \times 10^{-5} \text{ S/cm}$. Calculate the dissociation constant of acetic acid, if molar conductivity at infinite dilution for acetic acid is $390 \text{ S cm}^2/\text{mol}$. (Comptt. Delhi 2013)

(2M)

Question 4.

What is the effect of adding a catalyst on

(a) Activation energy (E_a), and

(b) Gibbs energy (ΔG) of a reaction? (All India 2017)